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PATENT & TRADEMARK OFFICE

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
Hiroshi SUGITATSU, et al.

SERIAL NO: 10/677,263 GROUP: 1742

FILED: October 3, 2003 EXAMINER: Scott R. KASTLER
1st RCE FILED: August 31, 2005
2nd RCE FILED: June 27, 2006
FOR: METHOD FOR PRODUCING FEED MATERIAL FOR MOLTEN METAL PRODUCTION AND METHOD FOR PRODUCING MOLTEN METAL

LETTER

Mail Stop DD
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is a Canadian Office Action for the Examiner's consideration. The reference listed therein has been cited in the Office Action dated September 29, 2004.

Respectfully Submitted,

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September 14, 2006

RICHES, MCKENZIE & HERBERT LLP
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Application No.	:	**2,444,158**
Owner	:	KABUSHIKI KAISHA KOBE SEIKO SHO (KOBE STEEL, LTD.)
Title	:	**METHOD FOR PRODUCING FEED MATERIAL FOR MOLTEN METAL PRODUCTION AND METHOD FOR PRODUCING MOLTEN METAL**
Classification	:	C21B 13/00 (2006.01)
Your File No.	:	**P60703**
Examiner	:	Benjamin Chan

YOU ARE HEREBY NOTIFIED OF A REQUISITION BY THE EXAMINER IN ACCORDANCE WITH SUBSECTION 30(2) OF THE *PATENT RULES*. IN ORDER TO AVOID ABANDONMENT UNDER PARAGRAPH 73(1)(A) OF THE *PATENT ACT*, A WRITTEN REPLY MUST BE RECEIVED WITHIN 6 MONTHS AFTER THE ABOVE DATE.

This application has been examined as originally filed.

The number of claims in this application is 14.

A search of the prior art has revealed the following:

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Reference Applied:

United States Patent
4,569,691 ¤ 11 February 1986 Fichte et al.

¤ citation stemming from a foreign search report

Fichte et al. disclose a method of making a metal alloy by a carbothermic reduction reaction of metal oxides with carbonzied wood chip in a low-shaft electrical furnace. A mixture of metal oxides powder and wood chip is charged to the furnace to form a burden of charge material on top of a reduced molten metal alloy at the bottom of the furnace. In the upper portion of the burden in the shaft furnace, the mixture is ***dried*** and ***heated*** to a temperature around 720°C, and the wood chip in the mixture is carbonized. The iron oxide in the metal oxides begins to be reduced by the carbonized wood chip. Below the upper portion of the burden, there is a

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reduction zone in which the carbonized wood chip further reduces the unreduced metal oxides to form CO & CO_2 that rise to the top of the burden for drying and heating the mixture. Below the reduction zone, the reduced metal alloy is melted to a molten metal alloy. The process heat is supplied by electric heating.

The examiner has identified the following defects in the application:

The claims on file do not comply with section 28.3 of the *Patent Act*. The subject matter of these claims would have been obvious on the claim date to a person skilled in the art or science to which they pertain having regard to Fichte et al.

The inventive feature of the alleged invention appears to be the separate heating/carbonization furnace for carbonization of the biomass in the mixture of metal oxide and biomass before the mixture is reduced in the subsequent reduction furnace. In the teaching of Fichte et al., a low shaft electrical furnace is employed to carry out the drying, heating, carbonization, reduction and melting steps. Therefore, the difference between the method disclosed by Fichte et al. and the alleged invention appears to be the heating/carbonization step that is conducted in a separate heating/carbonization furnace. However, the application of a separate furnace for heating and carbonization of the biomass in the mixture comprising metal oxide and biomass does not generate any unexpected distinct improvements to the method taught by Fichte et al. in which drying, heating, carbonization, reduction and melting are carried out in a single low shaft electrical furnace.

Further, the applicant claims that the heating furnace is substantially isolated from oxygen. Although, Fichte te al. did not specifically indicate that the heating zone in the upper portion of the burden is substantially free of oxygen, any person with ordinary skill would realize that the oxygen content in the heating zone would also be very low because the CO & CO_2 formed in the reduction zone rise through the burden to the upper portion of the burden and to the freeboard of the furnace where the CO is burnt to CO_2 with the ingressed air through the gap between the hood and the furnace to form an off-gas before the off-gas exits the furnace. Consequently, any ingressed air/oxygen would not enter the heating/carbonization zone in the upper portion of the burden in the furnace. Furthermore, the agglomeration of the mixture of carbonized biomass and metal oxide before the mixture is charged to the reduction furnace for reduction would also be appreciated by any skilled artisan. Consequently, claims 1-14 do not involve an inventive step.

Claim 2 is indefinite and does not comply with subsection 27(4) of the *Patent Act*. The term "charging the mixture" is ambiguous. It is unclear if the ***heated*** mixture or the "original" mixture containing the metal oxide-containing material and biomass is charged in the reducing furnace.

In view of the foregoing defects, the applicant is requisitioned, under subsection 30(2) of the *Patent Rules*, to amend the application in order to comply with the *Patent Act* and the *Patent Rules* or to provide arguments as to why the application does comply.

Under section 34 of the *Patent Rules*, any amendment made in response to this requisition must be accompanied by a statement explaining the nature thereof, and how it corrects each of the above identified defects.

Benjamin Chan
Patent Examiner
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